STANDARD FORM NO. 64

# Office Memorandum • UNITED STATES GOVERNMENT

TO : The Files - RD-107, Task Order 11

DATE: 28 October 1959

FROM : [redacted] 25X1

SUBJECT: Trip Report - Development of Chemically Rechargeable Water Activated Battery

1. On 22 October 1959 a visit was made to [redacted] 25X1 25X1 to monitor progress on Contract RD-107, Task Order 11, development of the water activated battery. Present for discussions were:

[redacted] 25X1

[redacted] - OC-E/R+D-EP (part time) 25X1

[redacted] - OC-E/R+D-EP

2. Development of the water activated battery is progressing smoothly. Optimum design has been made on the magnesium-silver chloride plates by bonding these plates together for easy fabrication. The plates are 9 inches long and 2.68 inches wide with the silver chloride being 0.015 inches thick and the magnesium 0.012 inches thick. The magnesium is clad with 0.001 inch of silver which acts as a chemical barrier and a series connector between the silver chloride and the magnesium. Each set of plates generates 1.5 volts with a current density of 250 milliamperes per square inch of plate area. A 12-volt battery consists of 9 plates and is approximately $9\frac{1}{2}$ x 3 x $1\frac{1}{4}$ inches including the container. This battery is activated by covering the plates with a 3% sodium chloride solution and will deliver an average current of 3 amperes for 75 minutes.

3. Some advantages of this chemically rechargeable battery are:

1. The electrolyte is universally available.
2. The battery is easily activated and deactivated.
3. The chemical recharging process involves only the handling of mechanically stable, chemically harmless foils which can easily be packaged and inserted into the battery case.
4. Enough heat is generated internally to facilitate satisfactory performance in low temperature environments.
5. The disposal of discharged materials is easy and safe.
6. Indefinitely long shelf life (as long as plates are kept dry).



DOC 5 REV DATE 2 APR 1980 BY 064540
ORIG COMP 033 OPI 56 TYPE 02
ORIG CLASS S PAGES 2 REV CLASS C
JUST 22 NEXT REV 2010 AUTH: HR 70-2

Trip Report - Development of Chemically Rechargeable Water Activated Battery

7. Minimum stand life of one hour after activation.
8. Current diversity (250 ma/sq. in.) sufficient to operate such equipments as RS-11, AS-3, etc.

Performance of the battery will be slightly impaired at ambient temperatures exceeding 30°C unless some means of cooling is provided. The contractor will make temperature tests in the next few weeks to determine the characteristics of the battery from -40°C to +40°C.

25X1

Distribution:
Monthly Report (2)
R+D Lab
EP Chrono
OC-T
OC-SP/EA